



[6450-01-P]

DEPARTMENT OF ENERGY

10 CFR Part 430

[Docket Number EERE–2010–BT–PET–0047]

RIN: 1904–AC57

**Energy Conservation Program: Request for Exclusion of 100 Watt R20 Short
Incandescent Reflector Lamp from Energy Conservation Standards**

AGENCY: Office of Energy Efficiency and Renewable Energy, Department of Energy.

ACTION: Final rule.

SUMMARY: The Energy Policy and Conservation Act of 1975 (EPCA), as amended, prescribes energy conservation standards for certain commercial and industrial equipment and various consumer products, including incandescent reflector lamps (IRLs). The U.S. Department of Energy (DOE) received a petition from the National Electrical Manufacturers Association requesting the initiation of a rulemaking to exclude from coverage under EPCA standards a certain type of IRL marketed for use in pool and spa applications. Specifically, the lamp at issue is a 100-watt R20 short (having a maximum overall length of 3 and 5/8 or 3.625 inches) IRL (“R20 short lamp”). DOE published this petition and a request for comment in the Federal Register on December 23, 2010. From its evaluation of the petition and careful consideration of the public comments, DOE

decided to grant the petition for rulemaking. DOE published a request for information in the Federal Register on September 8, 2011, followed by a notice of proposed rulemaking published in the Federal Register on December 31, 2012. Based on data gathered by DOE and the comments it received on these notices, DOE excludes R20 short lamps from coverage under the EPCA energy conservation standards.

DATES: The effective date of this rule is **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

ADDRESSES: The docket, which includes Federal Register notices, comments, and other supporting documents/materials, is available for review at regulations.gov. All documents in the docket are listed in the regulations.gov index. However, some documents listed in the index, such as those containing information that is exempt from public disclosure, may not be publicly available.

The docket webpage can be found on regulations.gov, under docket number EERE-2010-BT-PET-0047, at: www.regulations.gov/#!docketDetail;D=EERE-2010-BT-PET-0047. The regulations.gov webpage will contain simple instructions on how to access all documents, including public comments, in the docket.

For further information on how to review the docket, contact Ms. Brenda Edwards at (202) 586-2945 or by email: Brenda.Edwards@ee.doe.gov.

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I. Summary of the Final Rule

The Energy Policy and Conservation Act of 1975 (“EPCA” or “the Act”), Pub. L. 94-163 (42 U.S.C. 6291 et seq.), as amended,¹ prescribes energy conservation standards for certain commercial and industrial equipment and various consumer products, including incandescent reflector lamps (IRLs). The National Electrical Manufacturers Association (NEMA) petitioned the U.S. Department of Energy (DOE) to undertake a rulemaking to exclude from coverage under energy conservation standards a certain type of IRL that is marketed for use in pool and spa applications. 75 FR 80731 (Dec. 23, 2010). Specifically, the lamp at issue is a 100-watt (W) R20 short (having a maximum overall length [MOL] of 3 and 5/8 [or 3.625] inches) lamp that falls within the voltage range of covered IRLs (hereafter “R20 short lamp”). A review for exclusion is authorized under 42 U.S.C. 6291(30)(E), which allows the Secretary, by rule, to exclude from the terms “fluorescent lamp” and “incandescent lamp” any lamp for which standards would not result in significant energy savings because such lamp is designed for special applications or has special characteristics not available in reasonably substitutable lamp

¹ All references to EPCA in this document refer to the statute as amended through the American Energy Manufacturing Technical Corrections Act (AEMTCA), Pub. L. 112-210 (Dec. 18, 2012).

types. Based on its review for exclusion discussed in this rule, DOE determined that pursuant to 42 U.S.C. 6291(30)(E), R20 short lamps should be excluded from coverage under the applicable energy conservation standards for IRLs.

Under EPCA, 42 U.S.C. 6291(30)(E) allows for exclusion of a lamp for which standards would not result in significant energy savings because it is designed for special applications. Thus, DOE assessed the impact of the application of R20 short lamps on the potential energy savings from standards for these lamps. The characteristics of R20 short lamps, as well as their distribution channels and marketing, indicate that they are designed for pool and spa applications. DOE determined that because the R20 short lamps serve a very small market, they will not result in significant energy savings under the applicable conservation standards.

Additionally, 42 U.S.C. 6291(30)(E) allows exclusion based on unavailability of reasonably substitutable lamp types. Therefore, DOE analyzed the characteristics of R20 short lamps to determine if reasonable substitutes were commercially available. The most likely commercially available substitute lamp required a modification to the fixture lens in order to maintain the same light distribution. Therefore, DOE concluded that the special characteristics of an R20 short lamp are not available in a reasonably substitutable lamp type.

Therefore, under 42 U.S.C. 6291(30)(E), DOE excludes R20 short lamps from coverage of energy conservation standards based on the determination that energy

savings are not significant due to R20 short lamps' use in special applications and their having special characteristics not available in reasonably substitutable lamp types. Accordingly, DOE modifies the definition of "Incandescent reflector lamp" to include an exemption for R20 short lamps and adds a definition for "R20 short lamp" in 10 CFR 430.2.

II. Introduction

A. Authority

Title III, Part B of EPCA established the Energy Conservation Program for Consumer Products Other Than Automobiles,² a program covering most major household appliances (collectively referred to as "covered products"), including the types of IRLs that are the subject of this rulemaking. In particular, amendments to EPCA in the Energy Policy Act of 1992 (EPAc 1992), Pub. L. 102-486, established energy conservation standards for certain classes of IRLs and authorized DOE to conduct two rulemaking cycles to determine whether those standards should be amended. (42 U.S.C. 6291(1), 6295(i)(1) and (3)-(4)) DOE completed the first cycle of amendments by publishing a final rule in July 2009 (hereafter "2009 Lamps Rule"). 74 FR 34080 (July 14, 2009).³ Standards adopted in the 2009 Lamps Rule will hereafter be referred to as the "July 2012 standards."

² For editorial reasons, upon codification in the U.S. Code, Part B was redesignated Part A.

³ Information regarding the 2009 Lamps Rule can be found at on regulations.gov, docket number EERE-2006-STD-0131 at www.regulations.gov/#!docketDetail;D=EERE-2006-STD-0131 and on DOE's Building and Technologies webpage for Incandescent Reflector Lamps: http://www1.eere.energy.gov/buildings/appliance_standards/product.aspx/productid/58

The EPCA 1992 amendments to EPCA also added as covered products certain IRLs with wattages of 40 W or higher and established energy conservation standards for these IRLs. Section 322(a)(1) of the Energy Independence and Security Act of 2007 (EISA 2007), Pub. L. 110–140, subsequently expanded EPCA’s definition of “incandescent reflector lamp” to include lamps with a diameter between 2.25 and 2.75 inches.⁴ (42 U.S.C. 6291(30)(C)(ii)) This addition made R20 lamps (having a diameter of 20/8, or 2.5, inches) covered products subject to EPCA’s standards for IRLs.

Although these lamps are covered products, 42 U.S.C. 6291(30)(E) gives DOE the authority to exclude these lamps upon a determination that standards “would not result in significant energy savings because such lamp is designed for special applications or has special characteristics not available in reasonably substitutable lamp types.”

B. Background

The Administrative Procedure Act (APA; 5 U.S.C. 551 et seq.), provides, among other things, that “[e]ach agency shall give an interested person the right to petition for the issuance, amendment, or repeal of a rule.” (5 U.S.C. 553(e)) Pursuant to this provision of the APA, NEMA petitioned DOE for a rulemaking to exclude a type of IRL from coverage of energy conservation standards. Specifically, NEMA sought exclusion for R20 short lamps marketed for use in pools and spas. These lamps are sold in

⁴ Prior to the enactment of EISA 2007, this definition applied to lamps with a diameter that exceeds 2.75 inches. EISA 2007 modified this definition to make it applicable to IRLs with a diameter that exceeds 2.25 inches.

jurisdictions that allow pools and spas to be supplied with 120-volt (V) electricity. 75 FR 80731 (Dec. 23, 2010).

As stated in the previous section II.A, amendments to EPCA in EISA 2007 expanded EPCA’s definition of IRLs to include smaller diameter lamps, such as the R20 lamps that are the subject of this rulemaking. (42 U.S.C. 6291(30)(C)(ii)) The related statutory standards required compliance on June 15, 2008—180 days after the date of enactment of EISA 2007. (42 U.S.C. 6295(i)(1)(D)(ii)) Although R20 short lamps were required to comply with these standards, noncompliant R20 short lamps remained on the market until September 2010 because the manufacturers of these lamps mistakenly believed the lamps were excluded from coverage. 75 FR at 80732 (Dec. 23, 2010). The manufacturers had relied upon the Federal Trade Commission’s (FTC’s) labeling rule, 16 CFR Part 305, which, until July 19, 2011, published the previous lamp definitions from the EPCA 1992 amendments of EPCA.⁵ Before July 19, 2011, the FTC labeling regulations treated IRLs as general service incandescent lamps (GSILs), and erroneously continued to define GSILs as not including lamps specifically designed for “[s]wimming pool or other underwater service.” 16 CFR 305.3(m)(3) (2010) This exclusion was eliminated from EPCA by section 321 of EISA 2007. Upon realization that the FTC definitions were incorrect and the R20 short lamps were subject to energy conservation standards, the manufacturers removed the product from the market. Subsequently, in November 2010, NEMA submitted its petition to exclude R20 short lamps from coverage

⁵ The FTC published a final rule in the Federal Register on July 19, 2010, which updated its regulations regarding its definition of general service incandescent lamp to reflect the definitional changes provided in EISA 2007. 75 FR 41696, 41713-41714. These changes were effective July 19, 2011, at which time the amendments were reflected in the Code of Federal Regulations.

under EPCA standards. DOE published the petition in the Federal Register on December 23, 2010, and requested public comment. 75 FR 80731.

In the petition, NEMA asked for a rulemaking to exclude R20 short lamps from coverage of energy conservation standards, as well as a stay of enforcement pending that rulemaking. As grounds for the petition, NEMA stated that R20 short lamps qualify for exclusion under 42 U.S.C. 6291(30)(E), which allows the Secretary to exclude a fluorescent or incandescent lamp “as a result of a determination that standards for such lamp would not result in significant energy savings because such lamp is designed for special applications or has special characteristics not available in reasonably substitutable lamp types.” In its petition, NEMA contended that a rulemaking would find that energy conservation standards for R20 short lamps would not result in significant energy savings and that the lamp was designed for special applications or has special characteristics not available in substitute lamp types. Specifically, NEMA argued that because the lamp has a particular MOL and is specially designed to meet underwater illumination requirements of pool and spa manufacturers (including designated beam spread and lumen output), there are no substitute products on the market for this application. 75 FR at 80732 (Dec. 23, 2010).

Additionally, NEMA asserted that having energy conservation standards for this lamp type would lead to its unavailability in the United States. To the best of NEMA’s and manufacturers’ knowledge, the decision of the two manufacturers of R20 short lamps

to withdraw the product from the market had already resulted in its current unavailability. 75 FR at 80732-80733 (Dec. 23, 2010).

After reviewing NEMA's petition and all comments received in response,⁶ DOE concluded it has the legal authority to grant exclusions for IRLs under 42 U.S.C. 6291(30)(E) and initiated a rulemaking to make a determination on exclusion. DOE granted NEMA's petition for a rulemaking in a request for information (RFI) published in the Federal Register on September 8, 2011, announcing its decision and requesting more information on this product. 76 FR 55609. The RFI stated that DOE granted the petition for a rulemaking pursuant to the requirements specified in section 6291(30)(E), and would also grant a stay of enforcement pending the outcome of the rulemaking. In the RFI, DOE also specifically asked for comment on (1) the potential for unregulated R20 short lamps to be used as substitutes for other lamps subject to energy conservation standards; (2) whether the distinctive features, pricing, and application-specific labeling and marketing of R20 short lamps provide a sufficient deterrent to their use in other applications; (3) the availability of substitute lamps that would meet both energy conservation standards and relevant pool and spa application requirements; and (4) the technological feasibility of R20 short lamps complying with the prescribed energy conservation standards and also meeting relevant pool and spa application requirements. 76 FR at 55614.

⁶ NEMA's petition and associated comments can be found at regulations.gov under Docket No. EERE-2010-BT-PET-0047, at www.regulations.gov/#!docketDetail;D=EERE-2010-BT-PET-0047.

DOE reviewed all comments received in response to the RFI and conducted an analysis on the exclusion of R20 short lamps that included market research and manufacturer interviews. DOE then published a notice of proposed rulemaking (NOPR) in the Federal Register addressing comments and stating DOE's proposal to exclude R20 short lamps from energy conservation standards. 77 FR 76959 (Dec. 31, 2012). California Investor Owned Utilities, the Pacific Gas and Electric Company, San Diego Gas and Electric, and Southern California Edison, (hereafter the "CA IOUs"); Earthjustice and the National Resources Defense Council (hereafter "Earthjustice and NRDC"); and NEMA responded to the proposal and DOE considered these additional comments when developing this final rule. DOE's responses to these comments and the final analysis on the determination of exclusion of R20 short lamps from energy conservation standards are discussed in the following section.

III. General Discussion

A. Authority

In response to the NOPR, DOE received comment from Earthjustice and NRDC regarding DOE's authority to exclude R20 short lamps under 42 U.S.C. 6291(30)(E). Earthjustice and NRDC referred to their previous comments made in response to NEMA's petition, that section 6291(30)(E) can only apply to lamps for which significant energy savings would not be captured under future standards; the language of the provision (i.e., "would not result") does not permit DOE to apply it retroactively to lamps

with existing standards. (Earthjustice and NRDC, No. 15 at p. 1;⁷ Earthjustice and NRDC, No. 8 at p. 1)

As stated in the NOPR and RFI, the plain language of section 6291(30)(E) gives DOE the authority to exclude certain lamps for which standards would not result in significant energy savings. DOE does not believe this section applies only to standards that have not yet taken effect. Under 42 U.S.C. 6295(o)(3), DOE is already barred from adopting standards for any product for which the standards would not result in significant conservation of energy. Therefore, section 6291(30)(E) would be rendered redundant and superfluous, if it applied only to products for which standards are not yet in effect. Instead, DOE finds that section 6291(30)(E) contains no time bar for undertaking a rulemaking action to address a lamp for which standards would not result in significant energy savings because it is designed for special applications or has special characteristics not available in substitutable lamp types. Given the broad and growing coverage of DOE's energy conservation standards for lamps, DOE believes that Congress intended section 6291(30)(E) to provide a mechanism to address both those lamps covered by existing standards, as well as new lamps subsequently developed to which standards would otherwise apply. 76 FR at 55611 (Sept. 8, 2011); 77 FR at 76961 (December 31, 2012).

⁷ A notation in the form "Earthjustice and NRDC, No. 15 at p. 1" identifies a written comment that DOE has received and has included in the docket of this rulemaking. This particular notation refers to a comment: (1) submitted by Earthjustice and NRDC; (2) in document number 15 of the docket; and (3) on page 1 of that document.

Earthjustice and NRDC disagreed that section 6291(30)(E) would be redundant if not applicable to standards that already require compliance. Earthjustice and NRDC commented that section 6291(30)(E) retains a separate relevance from section 6295(o)(3) because it enables DOE to exclude lamps from statutory standards that do not yet apply, whereas section 6295(o)(3) only applies to DOE's adoption of standards via rulemakings. (Earthjustice and NRDC, No. 8 at pp. 1-2)

The language in section 6291(30)(E) does not explicitly condition exclusions from coverage of standards based on the authority under which the standards were developed. Interpreting section 6291(30)(E) as applying to only statutory standards in order to distinguish it from section 6295(o)(3) would limit the scope of section 6291(30)(E). The language in section 6291(30)(E) does not indicate that it was Congress's intent to limit the Secretary's authority of exemption. Therefore, DOE concluded it has the authority under section 6291(30)(E) to consider excluding R20 short lamps from energy conservation standards. Based on this authority, DOE assessed whether the lamps qualify for exclusion under each criterion set forth in section 6291(30)(E), and discusses its assessment in the following sections.

B. R20 Short Lamp Special Application Design and Impact on Energy Savings

As mentioned in the previous sections, under 42 U.S.C. 6291(30)(E), DOE may determine to exclude a fluorescent or incandescent lamp provided standards for the lamp would not result in significant energy savings because the lamp is designed for special applications. DOE first established that R20 short lamps serve a special application by

analyzing their design features and their marketing and distribution channels, and then evaluated the impact on energy savings from standards for R20 short lamps.

1. Special Application of R20 Short Lamps

a. R20 Short Lamp Design for Special Applications

NEMA's original petition stated that the R20 short lamp was specifically designed to meet the underwater illumination requirements of pool and spa part manufacturers. NEMA stated that the R20 short lamp's MOL, heat shield, filament, lumen output, and beam spread indicate the lamp was specifically designed for its application. 75 FR at 80733 (Dec. 23, 2010) Through interviews with lamp manufacturers and pool and spa part manufacturers, DOE was able to confirm that the R20 short lamp's MOL of 3 and 5/8 inches is required for compatibility with pool and spa fixtures; the heat shield is necessary for operation in a high temperature environment; and the lumen output range between 637 and 1022 lumens, and beam spread between 70 and 123 degrees are designed to satisfy consumer preferences, as well as building codes and standards specific for pool and spa applications. DOE also found that the filament in R20 short lamps is specifically placed to achieve the required beam spread. However, DOE concluded that filament placement does not stand on its own as a requirement for pools and spas, but is rather encompassed within the requirement for a specific beam spread. NEMA agreed with this list of special characteristics, affirming that they are representative of the R20 short lamp, and that there are no additional features to address. (NEMA, No. 14 at p. 1) Because the described R20 short lamp characteristics are designed to meet requirements specific to pools and spas, DOE believes that R20 short

lamps are designed for a special application. For more discussion on R20 short lamp features, see section III.C.

b. Marketing and Distribution Channels of R20 Short Lamps

In addition to design features, DOE also analyzed marketing literature and distribution channels for R20 short lamps when determining if R20 short lamps are designed for special applications. DOE found R20 short lamps are marketed and clearly packaged in a way that indicates the lamps are specifically for pool and spa use. Through lamp manufacturer interviews and research using publicly available information, DOE found that R20 short lamp manufacturers do not sell lamps directly to consumers. The commercial market is supplied through catalog warehouses; maintenance supply; maintenance, repair, operations (MRO) distributors; and pool and spa distributors. The residential market is primarily supplied through pool and spa distributors, which include large retail pool outlets and online retailers. Additionally, a small portion of products are sold to online retailers for pool and spa replacement parts, electrical distributors for direct installation in new pool construction, and hospitality and specialty lighting suppliers (e.g., medical equipment retail) for use with pools and spas. Therefore, DOE concluded that the application-specific packaging and non-traditional distribution channels indicate R20 short lamps are intended for pool and spa applications.

Based on the application-specific design characteristics of the R20 short lamp and the marketing and non-traditional distribution channels used by these lamp types, DOE concluded that R20 short lamps are designed for pool and spa applications. Pursuant to

section 6291(30)(E), DOE then proceeded to determine whether standards for the lamp would not result in significant energy savings because the lamp is designed for a special application.

2. Impact on Energy Savings

As part of its analysis to determine the impact of standards for R20 short lamps on energy savings, DOE evaluated the market share of R20 short lamps put forth by NEMA. In its petition, NEMA stated there are only two known manufacturers of the 100 W R20 short lamp in the United States. Both manufacturers submitted their confidential R20 short lamps 2009 shipment data to NEMA. In interviews, these lamp manufacturers commented that the shipment data from 2009 is representative of the R20 short lamp market before they stopped making the lamp available to consumers in 2010. For comparison, NEMA used an adjusted estimate of covered IRL shipments from the 2009 Lamps Rule. In the 2009 Lamps Rule, DOE estimated the shipments of covered IRLs to be 181 million units in the year 2005. Based on a decline in shipments of all IRLs in 2009, NEMA assumed covered IRLs would also decline, but estimated the shipments to still remain above 100 million. Based on a minimum of 100 million and a maximum of 181 million shipments of covered IRLs, NEMA calculated that the shipments of R20 short lamps represented significantly less than 0.1 percent of 2009 shipments of covered IRLs. 75 FR at 80733 (Dec. 23, 2010).

In interviews conducted for the NOPR, DOE independently obtained shipment information from lamp manufacturers that confirmed NEMA's estimate of R20 short

lamps being significantly less than 0.1 percent of 2009 shipments of covered IRLs. Therefore, DOE determined this to be an accurate assessment of the R20 short lamp market share and concluded that less than 0.1 percent of covered IRLs indicated a small market share for R20 short lamps. (More information on R20 short lamp energy use can be found in appendix B of this final rule.⁸)

As well as assessing the existing market share, DOE also analyzed the potential for growth due to market migration of R20 short lamps. NEMA stated that with the R20 short lamp's small market share, specialized distribution chains, and typically high price point, their exclusion from standards does not present any significant loss in energy savings. (NEMA, No. 14 at p. 2, 3) Earthjustice and NRDC referred to their previous comments made in response to the RFI, stating that they remain concerned that exempted R20 short lamps will migrate to applications other than pools and spas. (Earthjustice and NRDC, No. 15 at p. 1) The CA IOUs also referred to comments on the subject submitted for the RFI. Specifically, they reiterated that the size of R20 short lamps allows them to be used in applications other than pool and spa lighting, and that R20 short lamps are not necessarily more expensive than other small diameter IRLs and an increase in their production could allow manufacturers to achieve some economies of scale and lower prices further. The CA IOUs stated that DOE did not sufficiently address these two points in the NOPR. (CA IOUs, No. 16 at p. 1)

⁸ The appendices can be found on [www.regulations.gov](http://www.regulations.gov/#!docketDetail;D=EERE-2010-BT-PET-0047), under docket number EERE-2010-BT-PET-0047, at www.regulations.gov/#!docketDetail;D=EERE-2010-BT-PET-0047.

DOE agrees that R20 short lamps' MOL does not physically prohibit their use in other applications. Further, DOE had received information from lamp manufacturers stating that the end-user price varies, but typically ranges from \$12 to \$25. DOE market research also indicated a large variation, finding prices ranging from as low as \$2 to as high as \$34. Therefore, DOE acknowledges that the price of R20 short lamps can be competitive with other IRLs. However, R20 short lamps are sold through specialized distribution channels where they are marketed and packaged specifically for pool and spa applications. Additionally, even when R20 short lamps were perceived to be unregulated, there was no evidence of market migration to other applications. For these reasons, even though physical constraints may not limit their use in other applications and they may be sold at low prices, the substitution of R20 short lamps in general applications is highly unlikely.

The CA IOUs stated that while R20 lamps are sold through specific distribution channels, and are therefore unlikely to be purchased for use outside of the pool and spa lighting market, there are no rules to prevent manufacturers from selling R20 short lamps outside these distribution channels in the future. (CA IOUs, No. 16 at p. 1) The CA IOUs also noted that as consumers do more shopping online, historically hard lines between different distribution channels become increasingly blurred, and consumers have greater access to products being sold through a variety of merchants. (CA IOUs, No. 16 at pp. 1-2)

Overall, DOE did not find an indication of a potential trend towards selling R20 short lamps through general application channels. With few exceptions, DOE found that the majority of R20 short lamps available online are on websites selling specialty and pool and spa lighting or equipment. Therefore, even via online channels, R20 short lamps are still generally sold through designated, niche websites. Also, as noted in the NOPR, lamp manufacturers stated in interviews that the R20 short lamp market is primarily for replacement lamps and, therefore, historically has shown very little growth or decline. 77 FR at 76963 (December 31, 2012). Further, despite the fact that lamp manufacturers have not considered the lamps as regulated, the market share has remained extremely low and there has been no evidence of market migration. In addition to being found primarily through designated distribution channels, the lamps' packaging indicates they are specifically for pool and spa applications.

The CA IOUs also commented that even though R20 short lamps may currently be appropriately labeled for use in pools and spas only, there are no guidelines to ensure that consumers use them only in pool and spa applications. (CA IOUs, No. 16 at p. 1) Further, the CA IOUs stated that although R20 short lamps have not become a loophole previously, the new energy conservation standards for IRLs set by the 2009 Lamps Rule have required compliance since July 2012. The CA IOUs contended that because these standards increased existing lumen per watt (lm/W) standards for covered products, they provide greater incentive for excluded lamp types to become loopholes. The CA IOUs stressed that exclusion of R20 short lamps from standards is now more likely to result in

significant loss of energy savings through market migration towards these products. (CA IOUs, No. 16 at p. 2)

DOE finds it unlikely that consumers will seek out R20 short lamps packaged and labeled for use in pool and spa applications as replacements for any general service lighting impacted by the standards adopted by the 2009 Lamps Rule. The definition of R20 short lamp, as added by this final rule to 10 CFR 430.2, requires that they be designed, labeled, and marketed specifically for pool and spa applications. DOE believes the use of R20 short lamps in other applications despite their packaging and marketing materials is improbable as consumers are unable to purchase R20 short lamps at typical retail outlets such as large home improvement stores. As noted in section III.B.1.b, the majority of R20 short lamps are purchased from pool and spa distributors and specialty retail stores, and are not available where general service IRLs are typically sold. In its interviews with manufacturers for various lighting regulations, DOE has consistently received feedback that when replacing lamps, consumers attempt to replace the same lamp that was previously installed. It is not typical consumer behavior to seek out alternative lamp types from unrelated niche application lighting. Therefore, DOE concluded that the R20 short lamp market has limited potential for growth, and it is unlikely the lamps will migrate to general lighting applications.

Because the specialty application of the R20 short lamps results in a small market share and limited potential for growth for these lamps, DOE concluded that the exclusion

of R20 short lamps would not significantly impact the energy savings resulting from energy conservation standards.

C. Availability of R20 Short Lamp Special Characteristics in Substitutes

DOE may also exclude a lamp because its special characteristics are not available in reasonably substitutable lamp types. 42 U.S.C. 6291(30)(E) To determine whether an exclusion was acceptable based on this condition, DOE identified the special characteristics of R20 short lamps and determined whether these characteristics existed in other lamp types that would qualify as reasonable substitutes.

DOE considered a lamp characteristic special if, without it, the R20 short lamp would not be able to provide the special application for which it was designed (i.e., use in pools and spas). Therefore, even if the lamp characteristic was not unique to the R20 short lamp, it was deemed special if it was required for the lamp to function in pools and spas. DOE identified the following set of features that in combination allow the lamp to be used in a specialty application:

- Shortened MOL: An MOL of 3 and 5/8 inches or less;
- Heat Shield: A shield reflecting radiant energy from the lamp base;
- Beam Spread: A beam angle between 70 and 123 degrees;
- Lumen Output: A lumen output between 637 and 1,022 lumens; and
- Illumination: 0.5 W per square foot of water surface area or the equivalent.

DOE evaluated lamps that could serve as potential substitutes by determining whether they contained all of the above noted special characteristics of R20 short lamps.

DOE notes that a reasonable substitute lamp may also need to be Underwriters Laboratories (UL) listed for applicable pool and lighting fixtures in order to prevent voiding fixture manufacturer warranties. As stated in the NOPR, based on interviews with pool and spa part manufacturers, DOE finds that reasonable substitutes will not encounter barriers when obtaining a UL listing. 77 FR at 76964-76965 (December 31, 2012).

DOE surveyed the market and conducted manufacturer interviews to identify several commercially available lamps that were marketed or considered by manufacturers as potential substitutes for an R20 short lamp. These lamps included a more efficacious halogen-based R20 short lamp, a smaller diameter IRL, the 60 W PAR16, and certain light-emitting diode (LED) lamps. When analyzing each of the likely replacements, DOE focused on whether they possessed the special characteristics of the R20 short lamp.

In the NOPR, DOE tentatively concluded that there were no reasonably substitutable lamp types currently available that offered the special characteristics of R20 short lamps. NEMA agreed that there are no reasonable substitute lamp designs for this application that meet energy efficiency regulations and pass safety and performance requirements for this lamp type. NEMA stressed that should inferior substitutes be forced on the market purely due to energy efficiency goals, the existing relationship between the R20 short lamps and the devices that use them would not be replicated, which could create a potential safety and liability risk. Further, NEMA noted that its members have attempted to design substitute lamps using improved energy performance solutions, only

to have the products fail testing across the greater range of requirements, including energy conservation standards, safety requirements, and form factors. NEMA asserted that if it were possible to make substitute lamps, its members would have made them. (NEMA, No. 14 at p. 3)

However, the CA IOUs and Earthjustice and NRDC recommended that DOE further examine the possibility of a reasonable substitute for R20 short lamps. (Earthjustice and NRDC, No. 15 at p. 1; CA IOUs, No. 16 at pp. 2-4) DOE responds to their specific comments and presents its final assessment in the following sections.

1. Improved R20 Short Lamp

Currently, R20 short lamps use incandescent technology and do not meet previous energy conservation standards or the existing standards adopted in the 2009 Lamps Rule that required compliance in July 2012. In the NOPR, DOE investigated the potential of improving the efficacy of R20 short lamps using halogen capsules, also called halogen burners, known to improve the efficacy of IRLs. Halogen capsules consist of a small diameter, fused quartz envelope filled with a halogen molecule that surrounds the lamp's filament. Through teardowns, testing, calculations, and interviews, DOE's NOPR analysis concluded that although it is potentially feasible to incorporate a halogen burner into an R20 short lamp, the expected improvement in efficacy would not be enough to meet or exceed the July 2012 standards.

The CA IOUs urged DOE to undertake a more rigorous analysis of the achievable efficacy of R20 short lamps with halogen burners. They requested more detail on DOE's modeling approach and why DOE was unable to model a more efficacious halogen-based R20 lamp. As efficacy generally increases with lamp wattage, and none of the special characteristics were reported to affect efficacy, the CA IOUs found it unlikely that the modeled 75 W halogen R20 short lamp with a single-ended burner had a theoretical efficacy of only 10.3 lm/W. Specifically, they noted that the 45 W halogen R20 lamp used by DOE to scale to a 75 W halogen R20 short lamp would be compliant with the existing energy conservation standards and therefore, presumably have a minimum efficacy of 14.0 lm/W. Similarly, the CA IOUs questioned that the modeled 75 W halogen R20 short lamp with a double-ended burner had a theoretical efficacy of only 13.8 lm/W. (CA IOUs, No. 16 at p. 2)

In the NOPR analysis, DOE modeled efficacies at 75 W for an R20 short lamp in two scenarios, one using single-ended burner technology, and the second using double-ended burner technology. DOE developed these lamps by scaling from commercially available lamps. DOE selected a 45 W halogen R20 lamp with a single-ended burner that had a rated efficacy of 9.3 lm/W. Because the selected lamp is excluded⁹ from the existing standards for IRLs specified in 10 CFR 430.32(n)(5), it is not required to meet the minimum standard of 14.0 lm/W as assumed by the CA IOUs. When this lamp was scaled to a 75 W lamp with a single-ended burner, the efficacy improved to 10.3 lm/W.

⁹ For a full list of exclusions see 10 CFR 430.32(n)(6)(ii).

(More information on the scaling methodology can be found in appendix A of the NOPR.¹⁰)

To model the R20 short lamp with a double-ended burner, DOE used the tested double-ended burner efficacy for a standards-compliant 60 W PAR30 short lamp and added an average reflector efficiency factor of 62.2 percent, based on tested reflector efficiencies of R20 lamp types, to calculate an efficacy of 13.5 lm/W. When scaled to a 75 W lamp with a double-ended burner, the resulting efficacy improved to 13.8 lm/W. (More information on the scaling methodology can be found in appendix A of the NOPR.)

Therefore, as expected, in both scenarios the efficacies of the scaled higher wattage lamps were greater than the efficacies of the lower-wattage lamps from which they were scaled. However, because the lower-wattage lamp used to model an R20 short lamp with a single-ended burner is excluded from existing standards and has a lower efficacy than 14.0 lm/W, the modeled lamp would not necessarily meet current standards. Similarly, while a standards-compliant lamp's burner efficiency was used to model an R20 short lamp with a double-ended burner, the inclusion of an R-shaped reflector efficiency allows for the possibility that the modeled lamp would not be compliant to standards.

¹⁰ Appendix A from the NOPR can be found on regulations.gov, under docket number EERE-2010-BT-PET-0047, at www.regulations.gov/#!docketDetail;D=EERE-2010-BT-PET-0047.

The CA IOUs also questioned whether using the Illuminating Engineering Society of North America (IESNA) scaling equations alone can sufficiently capture the full range of benefits from moving to more efficient halogen burners. The CA IOUs gave the example of there possibly being some temperature advantages to using halogen or halogen infrared (HIR) burners due to less waste heat generation. (CA IOUs, No. 16 at pp. 2-3) The improved R20 short lamps are modeled using a set of industry-accepted IESNA equations. DOE believes these equations offer an accurate theoretical assessment of lamp performance based on a relationship between lifetime, lumens, and wattage.

Stakeholders recommended additional modeling scenarios in order to explore other pathways to a more efficacious R20 short lamp. The CA IOUs questioned DOE's decision to base the modeled R20 short lamp with a double-ended burner on a PAR30 short lamp with a double-ended burner, as its efficacy had to be discounted to account for the different reflector shape. The CA IOUs suggested DOE base the analysis on the 40 W Philips Halogena Energy Saver R20 lamp with a double-ended burner, so there would be no need to adjust the results for reflector efficiency. The CA IOUs also noted that the Philips Halogena R20 lamp has an efficacy of 14.25 lm/W, making it compliant with standards.¹¹ (CA IOUs, No. 16 at p. 2) The CA IOUs further recommended that DOE consider modeling the theoretical double-ended burner lamp with a higher efficiency reflector (as opposed to the average reflector efficiency for R20 lamps), given that the primary goal of the analysis is to determine achievable efficiency improvements for the product. (CA IOUs, No. 16 at p. 2) The CA IOUs had also noted that it might be possible

¹¹ Please note that the referenced lamp is excluded from the existing IRL standards specified in 10 CFR 430.32(n)(5). See 10 CFR 430.32(n)(6)(ii) for a list of exclusions.

to redesign other aspects of the lamp to better support halogen burners. (CA IOUs, No. 16 at pp. 2-3) Earthjustice and NRDC similarly encouraged DOE to seek additional information on the technical feasibility of improving the efficacy of R20 short lamps. (Earthjustice and NRDC, No. 15 at p. 1) In this final rule, taking into consideration the preceding recommendations from stakeholders, DOE modeled the performance of R20 short lamps utilizing HIR technology and also a more efficient reflector to determine if an improved R20 short lamp could be a viable substitute.

DOE identified commercially available HIR R20 lamps with single-ended or double-ended burners to use in modeling an HIR R20 short lamp with performance characteristics comparable to a 100 W incandescent R20 short lamp. While the specific Philips lamp suggested by the CA IOUs was no longer listed in their catalog, DOE was able to identify a currently available HIR R20 lamp with a double-ended burner with the same efficacy. Including this lamp, DOE identified a 40 W HIR R20 lamp with a single-ended burner, two 40 W HIR R20 lamps with double-ended burners, and one 45 W HIR R20 lamp with a double-ended burner.

DOE then performed teardowns to determine the dimensional compatibility of the identified HIR R20 lamps' halogen capsules with an R20 short lamp. Based on the dimensions of the burners and the R20 short lamp, DOE concluded that it is not possible to fit the double-ended halogen burners found in commercially available HIR R20 lamps in an R20 short lamp; it is possible, however, to fit the single-ended burner. Therefore, for this final rule, DOE used the HIR R20 lamp with a single-ended burner to model a

more efficacious R20 short lamp. Because DOE could not identify a double-ended HIR R20 lamp with a capsule that was dimensionally compatible with an R20 short lamp, DOE continued to use the 60 W HIR PAR30 short lamp tested for the NOPR to model an HIR R20 short lamp with a double-ended burner. A double-ended burner is more efficient than a single-ended burner because it has the lead wire outside of the capsule, where it does not interfere with the reflectance of energy from the capsule wall back to the capsule filament. This limits the loss of energy and raises the filament temperature, resulting in an increase in lamp efficacy.

To model an HIR R20 short lamp with a single-ended burner, DOE tested the efficacy of the identified 120 V, 40 W HIR R20 lamp with the dimensionally compatible single-ended burner. Using the IESNA equations relating lifetime, lumens, and wattage, DOE scaled the lumen output of the 40 W lamp in three scenarios, with the lumen output reasonably close to the minimum, maximum, and average lumen output of the desired range (637 and 1,022 lumens). Typically R20 short lamps have a lifetime of 2,000 or 2,500 hours. For this analysis, DOE assumed the maximum rated lifetime of 2,500 hours. Through these scaling calculations, DOE found that in the average lumen output scenario, the efficacy of the R20 short lamp could potentially be improved to meet the July 2012 standards with the use of HIR technology and a single-ended burner. For the maximum lumen output scenario the efficacy of the modeled lamp did not meet the July 2012 standards. In order to achieve the minimum lumen output, the modeled lamp wattage was reduced to lower than 45 W, thereby excluding the lamp from existing standards for IRLs

specified in 10 CFR 430.32(n)(5).¹² For more information on the improved efficacy calculations, see appendix A of this final rule.¹³

To determine the efficacy of an HIR R20 lamp with a double-ended burner, DOE revised the scaling analysis conducted for the NOPR by analyzing in addition to an average efficiency reflector, a more efficient reflector. DOE utilized the NOPR test results of the burner efficiency of a 120 V, 60 W PAR30 short lamp with a double-ended burner that is dimensionally compatible with an R20 short lamp. Using the IESNA equations relating lifetime, lumen output, and wattage, DOE first scaled the lumen output of the 60 W lamp with the average reflector efficiency in three scenarios, with the lumen output reasonably close to the minimum, maximum, and average lumen output of the desired range (637 and 1,022 lumens). DOE again assumed the maximum rated lifetime of R20 short lamps (2,500 hours). DOE found for the average lumen output and maximum lumen output scenarios that the efficacy of the modeled R20 short lamp with average reflector efficiency would not meet the July 2012 standards. However, DOE found for the minimum lumen output scenario, the efficacy of the R20 short lamp could potentially be improved to meet the July 2012 standards with the use of HIR technology with a double-ended burner.

As suggested by the CA IOUs, DOE then conducted the same analysis for the 60 W lamp with a higher efficiency reflector. DOE found for the average lumen output and

¹² For a full list of exclusions see 10 CFR 430.32(n)(6)(ii).

¹³ Appendix A can be found on regulations.gov, under docket number EERE-2010-BT-PET-0047, at www.regulations.gov/#!docketDetail;D=EERE-2010-BT-PET-0047.

maximum lumen output scenarios that the efficacy of the R20 short lamp could potentially be improved to meet the July 2012 standards with the use of HIR technology with a double-ended burner and improved reflector. In order to achieve the minimum lumen output, the modeled lamp wattage was reduced to lower than 45 W, thereby excluding the lamp from existing standards for IRLs specified in 10 CFR 430.32(n)(5).¹⁴ For more information on the improved efficacy calculation, see appendix A of this final rule.¹⁵

DOE notes that there is uncertainty associated with the theoretical modeling assessment. The modeled lamps reflect a standard R20 reflector shape rather than a short R20 reflector shape. Thus, the modeled lamp efficacies were based on R20 lamps with a longer MOL than the R20 short lamp's 3.625 inches. DOE compared standard length and long length halogen lamps that had the same shape, diameter, lifetime, voltage, and wattage, and could find no consistent relationship between lamp length and efficacy. Therefore, it is unknown how shortening the length of the reflector would impact the efficacy of the modeled lamps.

Even given this uncertainty, DOE evaluated whether the standards-compliant R20 short lamps based on the modeling described above could also include the special characteristics of the R20 short lamp. (See section III.C.) First, DOE believes that a heat shield could be included in the improved R20 short lamp as they are included in most

¹⁴ For a full list of exclusions see 10 CFR 430.32(n)(6)(ii).

¹⁵ Appendix A can be found on regulations.gov, under docket number EERE-2010-BT-PET-0047, at www.regulations.gov/#!docketDetail;D=EERE-2010-BT-PET-0047.

commercially available halogen IRLs. Next, DOE also determined that because the HIR capsules were dimensionally compatible with an R20 short lamp, the shortened MOL is retained. The addition of an HIR capsule would, however, affect the lumen output and beam spread. Based on its theoretical modeling, DOE determined that an HIR R20 short lamp may have a lumen output within the established range for an R20 short lamp of 637 to 1,022 lumens.¹⁶ However, because the position of the filament impacts the beam angle, DOE anticipates that the beam angle could be affected by the use of a halogen capsule. Because standards-compliant R20 short lamps are not commercially available, DOE is unable to confirm the beam angle of R20 short lamps that utilize an HIR capsule. However, DOE believes that the HIR R20 short lamps would likely meet the 0.5 watts per square foot of water surface area or equivalent illumination requirements because the theoretical lamps could deliver higher lumen output with reduced input wattage compared to the R20 short lamp.

Through the modeling assessment, DOE determined that the efficacy of an R20 short lamp could potentially be improved through the use of HIR technology. However, DOE cannot be certain of the improvement in efficacy due to the fact that the commercially available lamps from which the more efficacious R20 short lamps were scaled did not have the same reflector length as the R20 short lamp. Moreover, it is not clear that the more efficacious R20 short lamp would be able to achieve the combination of the special characteristics because HIR technology has not yet been incorporated in a commercially available R20 short lamp. Therefore, the modeled efficacy and

¹⁶ Note that, as modeled, the lamps have the necessary lumen output, but DOE is uncertain of the impact of a shorter reflector length.

performance characteristics of the HIR R20 short lamp could be affected by adjustments required to accommodate these features. Thus, DOE was unable to conclude, based on its modeling, whether an improved R20 short lamp could be compliant with standards and also include all the special characteristics of a R20 short lamp. .

If DOE concluded that the special characteristics of R20 short lamps prohibit the lamps from reaching efficacy levels achievable by other R20 lamps, the CA IOUs suggested DOE use the relationship between these lamp characteristics and efficacy to scale the existing standards to accommodate R20 short lamps, instead of granting a full exception from standards. (CA IOUs, No. 16 at p. 3) The authority of this rulemaking is based on 42 U.S.C. 6291(30)(E), which is limited to determining whether or not lamp types should be excluded from energy conservation standards. 42 U.S.C. 6291(30)(E) does not grant DOE the authority to establish unique energy conservation standards for these lamps.

2. 60 W PAR16 Lamp

In addition to analyzing HIR R20 short lamps as a reasonable substitute, DOE also analyzed 60 W PAR16 lamps. In the NOPR, DOE determined that the 60 W PAR16 lamp must be partnered with a fixture with an optimized LED lens to achieve the appropriate beam angle and does not contain all of the special characteristics of a R20 short lamp by itself. 77 FR at 76966-67 (December 31, 2012). NEMA agreed that the 60 W PAR16 lamp is therefore not an acceptable substitute for R20 short lamps. NEMA allowed that 60 W PAR16 lamps may provide adequate lumens and meet total

illumination requirements without an additional lens, but emphasized that their beam angle does not provide the same total illumination throughout the pool or spa. NEMA further clarified that because 60 W PAR16 lamps produce a targeted cone of light output, areas of the pool or spa where the lamp fixture is not directed would not be illuminated, creating safety issues. Additionally, NEMA noted that the R20 short lamp has been optimized for the fixture and the application, as corroborated by DOE's analysis, and a substitute, lower-wattage lamp would not provide the same service. (NEMA, No. 14 at p. 2)

For this final rule, DOE again evaluated the 60 W PAR16 lamp and found no change in its characteristics. Therefore, DOE maintains that because the 60 W PAR16 lamp alone cannot achieve the required beam spread for R20 short lamps, the lamp is not a reasonable substitute.

3. LED Lamps

In the NOPR, DOE also evaluated whether commercially available LED lamps could serve as reasonable substitutes for R20 short lamps. DOE determined that because they do not have the required special characteristics of R20 short lamps, specifically lumen output and beam spread, they are not reasonable substitutes. Furthermore, DOE did not consider LED lamp and fixture replacements as reasonable substitutes because they require more than the lamp to be replaced.⁷⁷ FR at 76967 (December 31, 2012).

Earthjustice and NRDC and the CA IOUs encouraged DOE to seek additional information on compliant LED lamps that could be reasonable substitutes. (Earthjustice and NRDC, No. 15 at p. 1; CA IOUs, No. 16 at p. 3) Specifically, the CA IOUs commented that LED technology has advanced rapidly in recent years, and LED light sources increasingly are used in many different applications. The CA IOUs stated that they have found several examples of commercially available pool and spa LED lamps sold by online retailers that could be alternatives to R20 short lamps. While these products are currently more expensive, the CA IOUs contended that they offer energy cost savings, longer lifetimes, and lower maintenance costs. The CA IOUs also noted that LED lamp costs are forecasted to fall quickly in the coming years as LED technology continues to mature. (CA IOUs, No. 16 at p. 3)

In the NOPR analysis, DOE had conducted market research to identify any commercially available LED lamps determined to be compatible with the R20 short lamp fixture and to have the required special characteristics of R20 short lamps. For this final rule, DOE updated its market analysis and verified the conclusions of the NOPR assessment; DOE did not find any LED lamps that had the necessary requirements of lumen output or beam spread.

The CA IOUs remarked that while DOE acknowledged that the PAR16 and LED replacement lamps are currently being used, DOE still claimed that these lamps should not be considered substitute products because neither lamp type is demonstrating full equivalency in terms of lumen output and/or measured light distribution. The CA IOUs

suggested this reasoning is not applicable when comparing LED to incandescent lighting in pool and spa applications. Pool and spa LEDs can be designed to provide cooler light compared to incandescent lamps, with higher intensity at shorter wavelengths within the spectrum of visible light. The CA IOUs explained that water has a higher optical absorption coefficient at longer wavelengths, which effectively acts as a filter that allows more cool light than warm light to pass through. Therefore, LED lamps need fewer total lumens to light a pool and will provide more even illumination with fewer “hot spots” than incandescent lighting. For these reasons, the CA IOUs argued that comparisons of lumen output and light distribution for pool and spa lighting should not be based on raw measurements of the light source outside of the fixture. (CA IOUs, No. 16 at p. 3)

In support of this argument, the CA IOUs referred to a 2010 emerging technology study wherein they evaluated the performance of incandescent and LED lamps in pool and spa lighting applications.¹⁷ The CA IOUs stated that the study measured the light output and distribution of R20 lamps and several LED replacement products (both lamps and fixtures) at the surface of a pool, and generally found the quality of light provided by the LED products was superior in terms of brightness and evenness of distribution. The CA IOUs also noted that LED pool and spa lighting products have probably continued to improve in the three years since this study was completed. (CA IOUs, No. 16 at p. 3)

¹⁷ Southern California Edison. *Commercial LED Pool Lamps*. December 2010. Southern California Edison Design and Engineering Services Customer Service Business Unit. Rosemead, CA. Report No. ET10SCE1130. Available here: www.etcc-ca.com/images/stories/et10sce1130_-_commercial_led_pool_lighting.pdf.

DOE reviewed the study referenced by the CA IOUs to further assess the possibility of LED lamps as a reasonable substitute for R20 short lamps. The study did find that uniformity and light levels improved relative to incandescent lighting in pools, but mainly for replacements of both lamp and fixture. For direct replacement LED lamps, the study noted that while they had the potential to improve uniformity, the results were less constant and in some cases poorer than those of the preexisting incandescent lighting.¹⁸ Further, the study stated that direct replacement LED lamps tend to fall in the “one size fits all” category, limiting their ability to provide the performance needed in certain applications.¹⁹ As noted previously, DOE concluded the criteria for a reasonable substitute must be met by the lamp alone. Based on the study, the direct replacement lamps tested did not consistently meet light levels compared to incandescent lighting.

The CA IOUs suggested that the “blue filter” effect causes the underwater performance of lumens to differ from the absolute lumen output as measured outside the underwater fixture. Thus, using measured lumens as a criterion to identify a reasonable substitute is unsuitable for this application. (CA IOUs, No. 16 at pp. 3-4) However, the study noted that the influence of the “blue filter” effect on pool lighting is proportional to pool size. The effect is greater in larger pools where light must travel long distances, than in spas where light travels shorter distances.²⁰ The variation in this phenomenon makes it problematic to develop an accurate and consistent light level metric. Further, a light level metric based on this effect cannot be used to determine replacements for all R20 short

¹⁸ Ibid, page 34.

¹⁹ Ibid, page 38.

²⁰ Ibid, pages 35-36.

lamps, as the blue filter effect is not significant in small pools. Hence, lumen output remains a more consistent and reliable metric of gauging the suitability of a replacement lamp for the R20 short lamp in all pool and spa applications, and can be applied across technologies, including LED lamps.

Finally, the study acknowledged that LED pool lighting systems would have difficulty meeting the 0.5 W per square foot or equivalent illumination building code requirement. The study suggested that building code requirements should be modified to account for the spectral distribution of lumens rather than the total lumen output.²¹ However, DOE must base its criteria for reasonable substitutes in this rulemaking on existing requirements.

For this final rule, DOE again evaluated commercially available LED lamps to determine whether they meet the special characteristics of R20 short lamps. DOE did not find an LED lamp that comprised all the necessary characteristics to serve as a reasonable substitute for an R20 short lamp. DOE also examined information provided by stakeholders regarding the potential improvement in pool and spa lighting by replacing incandescent with LED technology. However, because this improvement is attributable to replacement of lamp and fixture rather than only the lamp, DOE could not consider it in its evaluation of LEDs as reasonable substitutes for R20 short lamps. Further, DOE concluded that while there may be different ways to measure the illumination of a pool or spa, the lumen output range identified as a special characteristic for R20 short lamps

²¹ Ibid, page 36.

remains a reliable metric that can be applied across technologies and for all types of pools and spas.

4. Consumer Use of Substitute Products

The CA IOUs noted that R20 short lamps have not been manufactured since 2010. In the meantime, PAR16 lamps and LED products have been successfully installed in new and existing pool and spa fixtures without noticeable negative impacts to consumers. The CA IOUs further cited their experience implementing rebate programs for LED pool lighting, noting that consumers have expressed a high degree of satisfaction when replacing their existing R20 short lamps with LEDs. The CA IOUs affirmed that in their experience, consumers are not able to distinguish small differences in the beam angle or distribution of light, particularly when the lamps are behind a lens and under water. An additional interview the CA IOUs conducted with a major distributor of pool lighting products also confirmed these findings of consumer satisfaction. (CA IOUs, No. 16 at p. 3)

DOE evaluated lamps as reasonable substitutes using a set of criteria described in the beginning of section III.C. The fact that consumers can physically replace R20 short lamps with PAR16 or LED lamps does not automatically mean they are reasonable substitutes. Rather, the necessary criteria for a reasonable substitute lamp are based on special characteristics of the R20 short lamp identified in this analysis.

The CA IOUs called attention to the fact that for new fixtures the question of light source equivalency is a non-issue, and R20 short lamp fixtures do not offer any unique

functionality that cannot be met by other light sources. As new fixtures are sold together with the lamps they were designed for, fixture manufacturers are able to customize their lenses based on the source of lighting being used. (CA IOUs, No. 16 at p. 3) DOE acknowledges that a lamp and fixture replacement could adequately meet pool and spa lighting needs. However, as the scope of this rulemaking covers only the R20 short lamp itself, and not pool and spa fixtures, DOE must assess reasonable substitutes for the lamp alone.

IV. Conclusion

DOE has established that R20 short lamps were designed for pool and spa applications based on industry need and consumer preference. The design requirements included a wide beam spread, high lumen output, and adequate illumination; a heat shield to withstand the high operating temperatures of spas; and a shortened MOL, allowing the lamp to fit in underwater pool or spa fixtures. Further, DOE has determined that the majority of R20 short lamps are purchased from pool and spa distributors and specialty retail stores, and are not available where IRLs are typically sold for general lighting applications. R20 short lamps are also marketed and clearly packaged in a way that indicates the lamps are specifically for use in pools and spas. Therefore, DOE has concluded that R20 short lamps are designed for pool and spa applications. Due to the special application of R20 short lamps, DOE assessed the impact on energy savings from the exclusion of these lamps from energy conservation standards. As R20 short lamps have a small market share and limited potential for growth, DOE determined that the regulation of R20 short lamps would not result in significant energy savings.

DOE also evaluated lamps that could serve as potential substitutes by analyzing their ability to replicate the specialized characteristics of the R20 short lamp, specifically a shortened MOL, heat shield, high lumen output, wide beam spread, and adequate illumination. DOE concluded that there are no reasonably substitutable lamp types currently commercially available that offer the special characteristics of R20 short lamps.

Based on the assessments of this final rule, DOE determined that R20 short lamps should be excluded from energy conservation standards. DOE's analysis found that energy conservation standards for R20 short lamps would not result in significant energy savings because the lamps are designed for special applications and have special characteristics not available in reasonably substitutable lamp types. Therefore, under section 6291(30)(E), DOE excludes R20 short lamps from energy conservation standards by modifying the definition of "Incandescent reflector lamp" and adding a new definition for "R20 short lamp" in 10 CFR 430.2, as set forth in the regulatory text of this rule.

In response to the definition of R20 short lamp proposed in the NOPR, Earthjustice and NRDC commented that DOE should ensure the definition includes each of the identified special characteristics of R20 short lamps, including the incorporation of a heat shield, a beam angle between 70 and 123 degrees, and a minimum light output of 900 lumens. Earthjustice and NRDC stated that DOE should either add these criteria to the text of the R20 short lamp definition or clarify in the preamble of this final rule that the requirement that an R20 short lamp be "designed ... specifically for pool and spa

applications” includes the satisfaction of these three criteria. (Earthjustice and NRDC, No. 15 at p. 1)

DOE agrees with Earthjustice and NRDC on the importance of the special characteristics of R20 short lamps and has stated in section III.C of this final rule that each of these characteristics is required for the R20 short lamp to provide the special application for which it was designed. DOE believes the definition for R20 short lamp added to 10 CFR 430.2, which specifies the wattage, MOL, and requires that the lamp must be designed, labeled, and marketed specifically for pool and spa applications, sufficiently identifies the lamps designated for exclusion.

V. Procedural Issues and Regulatory Review

A. Review Under Executive Orders 12866 and 13563

Today’s regulatory action has been determined to not be a “significant regulatory action” under section 3(f) of Executive Order 12866, “Regulatory Planning and Review,” 58 FR 51735 (Oct. 4, 1993). Accordingly, the Office of Information and Regulatory Affairs (OIRA) in the Office of Management and Budget (OMB) is not required to review this action.

DOE has also reviewed this regulation pursuant to Executive Order 13563, issued on January 18, 2011 (76 FR 3281 (Jan. 21, 2011)). Executive Order 13563 is supplemental to and explicitly reaffirms the principles, structures, and definitions governing regulatory review established in Executive Order 12866. To the extent

permitted by law, agencies are required by Executive Order 13563 to: (1) propose or adopt a regulation only upon a reasoned determination that its benefits justify its costs (recognizing that some benefits and costs are difficult to quantify); (2) tailor regulations to impose the least burden on society, consistent with obtaining regulatory objectives, taking into account, among other things, and to the extent practicable, the costs of cumulative regulations; (3) select, in choosing among alternative regulatory approaches, those approaches that maximize net benefits (including potential economic, environmental, public health and safety, and other advantages; distributive impacts; and equity); (4) to the extent feasible, specify performance objectives, rather than specifying the behavior or manner of compliance that regulated entities must adopt; and (5) identify and assess available alternatives to direct regulation, including providing economic incentives to encourage the desired behavior, such as user fees or marketable permits, or providing information upon which choices can be made by the public.

DOE emphasizes as well that Executive Order 13563 requires agencies to use the best available techniques to quantify anticipated present and future benefits and costs as accurately as possible. In its guidance, OIRA has emphasized that such techniques may include identifying changing future compliance costs that might result from technological innovation or anticipated behavioral changes. For the reasons stated in the preamble, DOE believes that today's final rule is consistent with these principles, including the requirement that, to the extent permitted by law, benefits justify costs and that net benefits are maximized.

B. Review Under the Regulatory Flexibility Act

The Regulatory Flexibility Act (5 U.S.C. 601 et seq.) requires preparation of a final regulatory flexibility analysis (RFA) for any rule that by law must be proposed for public comment, unless the agency certifies that the rule, if promulgated, will not have a significant economic impact on a substantial number of small entities. As required by Executive Order 13272, “Proper Consideration of Small Entities in Agency Rulemaking,” 67 FR 53461 (August 16, 2002), DOE published procedures and policies on February 19, 2003, to ensure that the potential impacts of its rules on small entities are properly considered during the rulemaking process. 68 FR 7990. DOE has made its procedures and policies available on the Office of the General Counsel’s website (<http://energy.gov/gc/office-general-counsel>).

DOE reviewed today’s rulemaking under the provisions of the Regulatory Flexibility Act and the policies and procedures published on February 19, 2003. This rulemaking sets no standards; it only determines that exclusion from standards is warranted for R20 short lamps. DOE certifies that this rulemaking will not have a significant impact on a substantial number of small entities. The factual basis for this certification is as follows.

For manufacturers of R20 short lamps, the Small Business Administration (SBA) has set a size threshold, which defines those entities classified as “small businesses” for the purposes of the statute. DOE used the SBA’s small business size standards to determine whether any small entities would be subject to the requirements of the rule. 65

FR 30836, 30848 (May 15, 2000), as amended at 65 FR 53533, 53544 (Sept. 5, 2000) and codified at 13 CFR part 121. The size standards are listed by North American Industry Classification System (NAICS) code and industry description and are available at www.sba.gov/sites/default/files/files/Size_Standards_Table.pdf. R20 short lamp manufacturing is classified under NAICS 335110, “Electric Lamp Bulb and Part Manufacturing.” The SBA sets a threshold of 1,000 employees or less for an entity to be considered as a small business for this category. DOE identified two small business manufacturers of R20 short lamps.

Amendments to EPCA in EPAct 1992 established the current energy conservation standards for certain classes of IRLs. On July 14, 2009, DOE published a final rule in the Federal Register that amended these standards, with a compliance date of July 14, 2012. 74 FR 34080. In that rulemaking, DOE concluded that the standards would not have a substantial impact on small entities and, therefore, did not prepare a regulatory flexibility analysis. 74 FR at 34174-34175 (July 14, 2009). On the basis of the foregoing and because this rulemaking to establish an exclusion from standards decreases regulatory burden, DOE certifies that this rulemaking will have no significant economic impact on a substantial number of small entities. Accordingly, DOE has not prepared an RFA for this final rule. DOE transmitted the certification and supporting statement of factual basis to the Chief Counsel for Advocacy of the SBA for review under 5 U.S.C. 605(b).

C. Review Under the Paperwork Reduction Act

This rulemaking, which establishes an exclusion from energy conservation standards for R20 short lamps, would impose no new information or record keeping requirements. Accordingly, the OMB clearance is not required under the Paperwork Reduction Act. (44 U.S.C. 3501 et seq.)

D. Review Under the National Environmental Policy Act of 1969

Pursuant to the National Environmental Policy Act (NEPA) of 1969, DOE has determined that this final rule fits within the category of actions that are categorically excluded from review under the National Environmental Policy Act of 1969 (Pub. L. 91-190, codified at 42 U.S.C. 4321 et seq.), and DOE's implementing regulations at 10 CFR part 1021. Specifically, the rulemaking amends an existing rule without changing its environmental effect, and, therefore, is covered by Categorical Exclusion (CX) A5 found in 10 CFR part 1021, subpart D, appendix A. Therefore, as DOE has made a CX determination for the rulemaking, DOE does not need to prepare an Environmental Assessment or Environmental Impact Statement. DOE's CX determination is available at <http://cxnepa.energy.gov/>.

E. Review Under Executive Order 13132

Executive Order 13132, "Federalism." 64 FR 43255 (Aug. 10, 1999) imposes certain requirements on Federal agencies formulating and implementing policies or regulations that preempt State law or that have Federalism implications. The Executive Order requires agencies to examine the constitutional and statutory authority supporting any action that would limit the policymaking discretion of the States and to carefully

assess the necessity for such actions. The Executive Order also requires agencies to have an accountable process to ensure meaningful and timely input by State and local officials in the development of regulatory policies that have Federalism implications. On March 14, 2000, DOE published a statement of policy describing the intergovernmental consultation process it will follow in the development of such regulations. 65 FR 13735. EPCA governs and prescribes Federal preemption of State regulations as to energy conservation for the products that are the subject of today's final rule. States can petition DOE for exemption from such preemption to the extent, and based on criteria, set forth in EPCA. (42 U.S.C. 6297) No further action is required by Executive Order 13132.

F. Review Under Executive Order 12988

With respect to the review of existing regulations and the promulgation of new regulations, section 3(a) of Executive Order 12988, "Civil Justice Reform," imposes on Federal agencies the general duty to adhere to the following requirements: (1) eliminate drafting errors and ambiguity; (2) write regulations to minimize litigation; and (3) provide a clear legal standard for affected conduct rather than a general standard and promote simplification and burden reduction. 61 FR 4729 (Feb. 7, 1996). Section 3(b) of Executive Order 12988 specifically requires that Executive agencies make every reasonable effort to ensure that the regulation: (1) clearly specifies the preemptive effect, if any; (2) clearly specifies any effect on existing Federal law or regulation; (3) provides a clear legal standard for affected conduct while promoting simplification and burden reduction; (4) specifies the retroactive effect, if any; (5) adequately defines key terms; and (6) addresses other important issues affecting clarity and general draftsmanship under

any guidelines issued by the Attorney General. Section 3(c) of Executive Order 12988 requires Executive agencies to review regulations in light of applicable standards in section 3(a) and section 3(b) to determine whether they are met or it is unreasonable to meet one or more of them. DOE has completed the required review and determined that, to the extent permitted by law, this final rule meets the relevant standards of Executive Order 12988.

G. Review Under the Unfunded Mandates Reform Act of 1995

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA) requires each Federal agency to assess the effects of Federal regulatory actions on State, local, and Tribal governments and the private sector. Pub. L. 104-4, sec. 201 (codified at 2 U.S.C. 1531). For an amended regulatory action likely to result in a rule that may cause the expenditure by State, local, and Tribal governments, in the aggregate, or by the private sector of \$100 million or more in any one year (adjusted annually for inflation), section 202 of UMRA requires a Federal agency to publish a written statement that estimates the resulting costs, benefits, and other effects on the national economy. (2 U.S.C. 1532(a), (b)) The UMRA also requires a Federal agency to develop an effective process to permit timely input by elected officers of State, local, and Tribal governments on a “significant intergovernmental mandate,” and requires an agency plan for giving notice and opportunity for timely input to potentially affected small governments before establishing any requirements that might significantly or uniquely affect small governments. On March 18, 1997, DOE published a statement of policy on its process for

intergovernmental consultation under UMRA. 62 FR 12820. DOE's policy statement is also available at <http://energy.gov/gc/office-general-counsel>.

DOE examined today's rulemaking according to UMRA and its statement of policy and determined that the rule contains neither an intergovernmental mandate, nor a mandate that may result in the expenditure of \$100 million or more in any year. Instead, the rule excludes R20 short lamps from standards, thereby eliminating any existing associated compliance costs. Accordingly, no further assessment or analysis is required under the Unfunded Mandates Reform Act of 1995.

H. Review Under the Treasury and General Government Appropriations Act, 1999

Section 654 of the Treasury and General Government Appropriations Act, 1999 (Pub. L. 105-277) requires Federal agencies to issue a Family Policymaking Assessment for any rule that may affect family well-being. This rule would not have any impact on the autonomy or integrity of the family as an institution. Accordingly, DOE has concluded that it is not necessary to prepare a Family Policymaking Assessment.

I. Review Under Executive Order 12630

DOE has determined, under Executive Order 12630, "Governmental Actions and Interference with Constitutionally Protected Property Rights" 53 FR 8859 (March 18, 1988), that this regulation would not result in any takings that might require compensation under the Fifth Amendment to the U.S. Constitution.

J. Review Under the Treasury and General Government Appropriations Act, 2001

Section 515 of the Treasury and General Government Appropriations Act, 2001 (44 U.S.C. 3516, note) provides for Federal agencies to review most disseminations of information to the public under guidelines established by each agency pursuant to general guidelines issued by OMB. OMB's guidelines were published at 67 FR 8452 (Feb. 22, 2002), and DOE's guidelines were published at 67 FR 62446 (Oct. 7, 2002). DOE has reviewed today's final rule under the OMB and DOE guidelines and has concluded that it is consistent with applicable policies in those guidelines.

K. Review Under Executive Order 13211

Executive Order 13211, "Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use" 66 FR 28355 (May 22, 2001), requires Federal agencies to prepare and submit to OIRA at OMB, a Statement of Energy Effects for any significant energy action. A "significant energy action" is defined as any action by an agency that promulgates or is expected to lead to promulgation of a final rule, and that: (1) is a significant regulatory action under Executive Order 12866, or any successor order; and (2) is likely to have a significant adverse effect on the supply, distribution, or use of energy, or (3) is designated by the Administrator of OIRA as a significant energy action. For any significant energy action, the agency must give a detailed statement of any adverse effects on energy supply, distribution, or use should the proposal be implemented, and of reasonable alternatives to the action and their expected benefits on energy supply, distribution, and use.

DOE has concluded that today's regulatory action, which excludes R20 short lamps from energy conservation standards, is not a significant energy action because the exclusion from standards is not likely to have a significant adverse effect on the supply, distribution, or use of energy, nor has it been designated as such by the Administrator at OIRA. Accordingly, DOE has not prepared a Statement of Energy Effects on the final rule.

L. Review Under the Information Quality Bulletin for Peer Review

On December 16, 2004, OMB, in consultation with the Office of Science and Technology Policy (OSTP), issued its Final Information Quality Bulletin for Peer Review (the Bulletin). 70 FR 2664 (Jan. 14, 2005). The Bulletin establishes that certain scientific information shall be peer reviewed by qualified specialists before it is disseminated by the Federal Government, including influential scientific information related to agency regulatory actions. The purpose of the Bulletin is to enhance the quality and credibility of the Government's scientific information. Under the Bulletin, the energy conservation standards rulemaking analyses are "influential scientific information," which the Bulletin defines as scientific information the agency reasonably can determine will have, or does have, a clear and substantial impact on important public policies or private sector decisions. 70 FR 2667 (Jan. 14, 2005).

In response to OMB's Bulletin, DOE conducted formal in-progress peer reviews of the energy conservation standards development process and analyses and has prepared a Peer Review Report pertaining to the energy conservation standards rulemaking

analyses. Generation of this report involved a rigorous, formal, and documented evaluation using objective criteria and qualified and independent reviewers to make a judgment as to the technical/scientific/business merit, the actual or anticipated results, and the productivity and management effectiveness of programs and/or projects. The “Energy Conservation Standards Rulemaking Peer Review Report” dated February 2007 has been disseminated and is available at the following Web site:

www1.eere.energy.gov/buildings/appliance_standards/peer_review.html.

M. Congressional Notification

As required by 5 U.S.C. 801, DOE will report to Congress on the promulgation of this rule prior to its effective date. The report will state that it has been determined that the rule is not a “major rule” as defined by 5 U.S.C. 804(2).

VI. Approval of the Office of the Secretary

The Secretary of Energy has approved publication of today's final rule.

List of Subjects in 10 CFR Part 430

Administrative practice and procedure, Confidential business information, Energy conservation, Household appliances, Imports, Intergovernmental relations, Reporting and recordkeeping requirements, and Small businesses.

Issued in Washington, DC, on November 7, 2013.

David T. Danielson
Assistant Secretary
Energy Efficiency and Renewable Energy

For the reasons set forth in the preamble, DOE amends part 430 of chapter II, subchapter D, of title 10 of the Code of Federal Regulations, as set forth below:

PART 430 - ENERGY CONSERVATION PROGRAM FOR CONSUMER PRODUCTS

1. The authority citation for part 430 continues to read as follows:

Authority: 42 U.S.C. 6291-6309; 28 U.S.C. 2461 note.

2. In §430.2, revise the definition for “Incandescent reflector lamp” and add the definition for “R20 short lamp,” in alphabetical order, to read as follows:

§430.2 Definitions.

* * * * *

Incandescent reflector lamp (commonly referred to as a reflector lamp) means any lamp in which light is produced by a filament heated to incandescence by an electric current, which: contains an inner reflective coating on the outer bulb to direct the light; is not colored; is not designed for rough or vibration service applications; is not an R20 short lamp; has an R, PAR, ER, BR, BPAR, or similar bulb shapes with an E26 medium screw base; has a rated voltage or voltage range that lies at least partially in the range of 115 and 130 volts; has a diameter that exceeds 2.25 inches; and has a rated wattage that is 40 watts or higher.

* * * * *

R20 short lamp means a lamp that is an R20 incandescent reflector lamp that has a rated wattage of 100 watts; has a maximum overall length of 3 and 5/8, or 3.625, inches; and is designed, labeled, and marketed specifically for pool and spa applications.

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